The nucleolus of the generalized standard tree game

Balázs Sziklai
HAS KTI

Abstract

Standard tree games are cost games that model how to share the costs of infrastructural developments such as the construction of a water pipeline network or an internet cable network. In the most basic situation we have a tree, where nodes represents players and there is a cost function defined on the edges. There is a special node the so called root of the tree. This node can be interpreted as the service provider. The aim of every player is to get connected to the root. The question is how to allocate the costs that arise from the construction of the edges. A more generalized problem is when the underlying structure is considered to be a directed acyclic graph. In such a network players can have multiple routes to the root. Naturally only a tree will be constructed in the end, but players that have more than one possibilities to get to the root have greater bargaining power when it comes down to sharing the costs. I will show a polynomial time algorithm to find the nucleolus for both problem.